GEOGRAPHIC NEWS BULLETINS

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THE NATIONAL GEOGRAPHIC SOCIETY

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General Headquarters, Washington, D. C.

Contents for Week of April 16, 1934. Vol. XIII. No. 8.

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"THE GLACIER PRIEST" IN ACTION

The Rev. Bernard R. Hubbard, S.J., taking motion-pictures of Aniakchak volcano on one of his expeditions to Alaska. During the summer of 1934, Father Hubbard will explore and map Alaskan areas changed by recent volcanic disturbances (See Bulletin No. 4).

HOW TEACHERS MAY OBTAIN THE BULLETINS

The Geographic News Bulletins are published weekly throughout the school year (thirty issues) and will be mailed to teachers for one year upon receipt of 25 cents (in stamps or money order). Entered as second-class matter, January 27, 1922, at the Post Office at Washington, D. C., under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized February 9, 1922.

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Cherry, Apple, Peach, Rose and Other Blossom Festivals

"THE flowers that bloom in the spring, tra la, have nothing to do with the case"—may be true enough in light opera, but not in nearly a dozen American cities which now celebrate blossom festivals; some of them in the Spring and some in other seasons.

This year Washington will mark the flowering of its beautiful Japanese cherry trees with a three-day fete, featured by military and historical parades, a festival queen, a sunrise ceremony in Japanese costumes, and other pageantry.

The exact date of the celebration cannot be announced—due to the whims of fickle Mother Nature—but it is expected that the lovely trees around the Tidal Basin will come into full bloom about the middle of April. The Japanese cherry blossom fete, it is planned, will become an annual event in the National Capital.

When Spring Comes to Apple Pie Ridge

In many European and Asiatic countries flower festivals have been held for centuries and in some places the celebrations have a religious significance. Flower festivals in this country, however, are of comparatively recent origin.

One of the most famous of American natural-flower pageants (as distinguished from formal "flower shows" held indoors) is the Shenandoah Apple Blossom Festival held in Winchester, Virginia, each May. When Spring spreads its mantle of pink and white beauty over Apple Pie Ridge and Turkey Knob this old Shenandoah Valley town is host to thousands during a two-day pageant, "ruled" by the Apple Blossom Queen and her fair court. This year's festival will be the eleventh annual celebration of the event.

This spring Charleston, South Carolina, held the first of what is expected to be an annual Azalea Festival. The Festival opened on March 14, a little ahead of the period when the azaleas of the world-famous Magnolia Gardens, Middleton Place Gardens and Cypress Gardens are at the height of their beauty, but visitors were rewarded with the unusual spectacle of a combination of the magnificent late-blooming varieties of camellia japonicas and the colorful, early-blooming varieties of azaleas.

Asheville, North Carolina, each year greets the flowering of the beautiful mountain rhododendron with a gay festival in the late spring. The Governor chooses a Rhododendron Queen.

Chinese Tung Blossoms in Florida

Down in Georgia one community celebrates the flowering of vast groves that produce the State's most famous crop—peaches. At Fort Valley an historical pageant, with many floats, coincides with the pink blossoming of thousands of peach trees.

One of the most unusual flower festivals in the country is that recently inaugurated in Gainesville, Florida, where the blossoming of tung trees in April is celebrated. The tung tree, imported a few decades ago from China, has a beautiful pink and white flower and produce nuts that yield tung oil, an essential ingredient of varnishes and paints.

Kentucky's annual Mountain Laurel Festival near Pineville, in the southeastern part of the State, is a combination garden party, patriotic celebration, sight-seeing excursion and family reunion.

The flowers for which the celebration is named grow in profusion in the thickets and hillsides near Pineville. A beautiful trail winds through walls of flowering plants to a natural amphitheatre where a pageant is held. In addition to the dainty pink laurel the region is also noted for many flowering rhododendrons, whose blossoms are larger and more garish, ranging from waxy white through the pinks to purple. This festival is usually held early in June.

Rose Festivals On Pacific Coast

Pasadena, California, boasts the oldest of the Nation's large flower festivals—the annual Tournament of the Roses. This year the 45th celebration of the classic, held on January 1, revealed the wide variety of flowers that bloom in Southern California in winter. Months are spent in preparation for this gigantic fiesta, which each year is built around a different theme. This year "Tales from the Seven Seas" were recalled with nearly a hundred motorized floats fashioned from 5,000,000 flowers.

Although roses predominate in the Pasadena Tournament, carnations, marigolds, orange blossoms, heather, larkspur, delphinium, and scores of other flowers are used to carry out float designs based on poems, works of art, Mother Goose rhymes, etc. The annual East-West football game, held in the Rose Bowl during the festival, attracts nation-wide attention to the celebration.

Another noted Pacific coast flower festival is the annual Santa Clara County Fiesta de las Rosas, usually held in San Jose in May. While there have been flower festivals in Santa Clara

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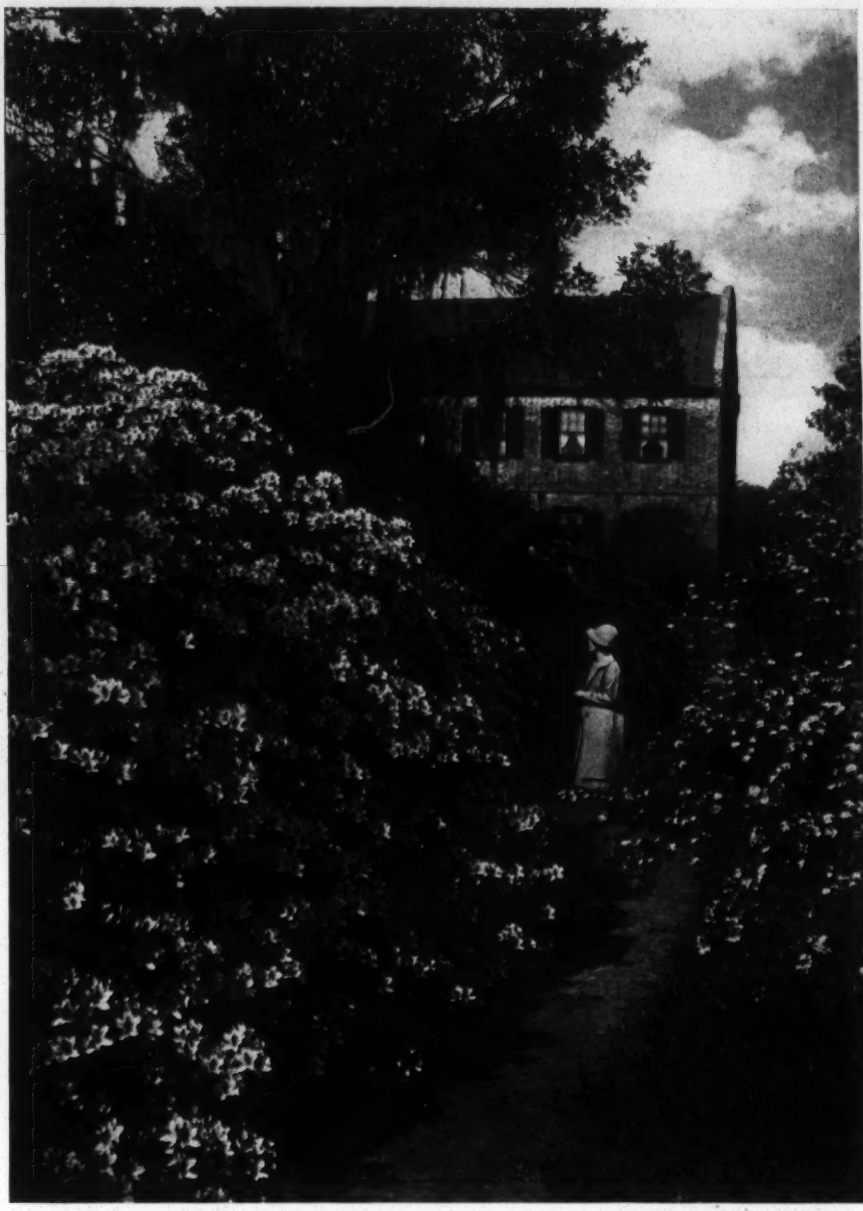

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SPRING'S MAGIC COMES TO MIDDLETON PLACE GARDENS

Much of the beauty of this world-famous estate on the Ashley River, north of Charleston, South Carolina, is due to André Michaux, the French botanist, who is supposed to have introduced here the Japanese varnish tree, the Chinese candleberry tree, the Japanese ginkgo, the Asiatic acacia, and the Chinese azalea. "In the early morning," one visitor relates, "squirrels frisk and hurry on ceaseless errands, while mocking birds spray jewels from heavy, dew-drenched branches of azalea blossoms, as they dart in ecstasy, transposing the glory of color into song." This year Charleston held its first annual Azalea Festival (See Bulletin No. 1).

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"Set-Back Skyscrapers" of the Arabian Deserts

WHETHER or not French flyers have found the legendary capital of the Queen of Sheba, they have again called attention to the vast, forbidding Arabian peninsula, one of the richest areas for geographic and archeological exploration now left in the world.

Arabia has lured explorers recently because back on its burning plateaus, in the scorching heat of hidden wadies (dry river beds), have been found strange tribesmen in cities of "set-back skyscrapers," eight to ten stories high.

Obstinate warriors for centuries have entrenched themselves in these lofty forts that, at a distance, resemble modern New York or Chicago apartment houses, from their decorated doorways to "pent houses" and roof gardens (see illustration, next page).

Traces of Old Caravan Trails

Farther inland lie great areas of lonely desert, with "singing sands" such as Marco Polo heard in the Gobi, and traces of ancient caravan trails that date back to the era when Solomon bought gold and frankincense from Biblical Ophir. Two notable crossings of the huge Rub al Khali desert were made recently by Englishmen—one by Bertram Thomas and the other by H. St. John B. Philby.

While the Americas were being discovered and explored, while the Poles were being attained and the Polar regions visited again and again, the Arabian Peninsula, lying in the heart of the oldest known civilizations, has remained almost unseen by white men.

About 300,000 square miles of territory, equal to the combined areas of Germany and Italy, is blank or but vaguely sketched on modern maps. Yet some of the border lands and surrounding seas of this huge ellipse hum with activity.

That Arabia has been able to guard its mysteries so long against the prying Westerner is due partly to the forbidding nature of the country and partly to the religious fanaticism of its sparse population. Southern Arabia, now a desert, was probably fertile and well-watered when Europe and large parts of Asia were still in the Ice Age. It may well have been one of the earliest homes of civilized man. Climatic changes at a later date brought extreme dryness and a drift of sands from the north.

Dotted with Unstudied Ruins

The Arabian Peninsula is dotted with ancient ruins, some of which have been seen only in passing. Only a few of these have been studied by scientists.

Undoubtedly there are other ruins yet unfound, some of them buried in the sand far from modern caravan routes.

One of the highroads of the Old World, the overland trade-route from India and Persia to Egypt and Syria, and to other countries around the Mediterranean, began in Hadhramaut, in southeastern Arabia, and wound through the plateau, emerging at various points in the Near East.

Hadhramaut made its own contributions of frankincense, myrrh and aloe to this ancient world commerce. Its cities were busy and prosperous, and known to traders throughout the Near East.

Some writers hold that in the southern quarter of Arabia was that Ophir rich

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County ever since San Jose was incorporated as a city on March 27, 1850, it is only since 1925 that a yearly fiesta program has been presented.

With the June blooming of roses in Portland, Oregon, lawns, hedges, and flower beds are groomed for crowds that visit "Rose City" for the annual Rose Festival. School children hold gymnastic drills and dances at the stadium; the city auditorium is given over to a rose show that has had 325 varieties entered; and the International Rose Test Gardens at Washington Park are opened for public inspection. The final event of the celebration, which has been held for over a quarter of a century, is a parade of floats.

Note: For additional photographs (many in beautiful natural colors) of flower festivals and the regions in which they are held, see: "A Native Son's Rambles in Oregon," *National Geographic Magazine*, February, 1934; "Tokyo To-day," February, 1932; "Smoke Over Alabama," December, 1921; "Washington Through the Years," November, 1931; "Florida—The Fountain of Youth," January, 1930; "California, Our Lady of Flowers," June, 1929; "Virginia—A Commonwealth That Has Come Back," April, 1929; "Marching Through Georgia Sixty Years After," September, 1926; and "Motor-Coaching Through North Carolina" and "The Ashley River and Its Gardens (South Carolina)," May, 1926.

Bulletin No. 1, April 16, 1934.

Photograph by Underwood and Underwood

"THE CHERRY BLOSSOM IS FIRST AMONG FLOWERS," SAY THE JAPANESE

Ever since an ancient poet likened it to the "soul of Yamato" (Japan), because of the sunshine which attends the tree's April blooming, the beauty of its blossom-laden boughs and fluttering petals, the Japanese people have regarded the flowering cherry with affection which amounts almost to worship. The main avenue of Shiba Park, Tokyo, at blossom time.

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Hakodate, a Japanese Gibraltar

THE Japanese city of Hakodate has often been threatened by earthquakes, high winds and heavy volcanic smoke. But its worst disaster occurred last month when a swiftly-spreading fire, followed by cold weather, took a toll of nearly 1,000 lives and left nearly 23,000 persons homeless. It was Japan's worst disaster of this kind since the Tokyo fire in 1923.

Hakodate, sometimes called the "Gibraltar of Japan," is the principal port and largest city on triangular Hokkaido Island, which lies north of Honshu, the main island of the Japanese archipelago.

Among Japanese cities Hakodate ranks tenth in size, having nearly 200,000 inhabitants. Like other Japanese cities it lies within a region of seismic (earthquake) disturbances.

Guarded by Rocky Headland

Hakodate won its nickname of the "Japanese Gibraltar" because it is built at the base of a rocky headland which is crowned with a stone fort. It has a splendid, deep-water harbor filled with shipping. Hakodate is the base for a large fishing fleet. Boats, running on frequent schedules, connect it with Yokohama and other Japanese ports.

The city's cheery, clean, electrically-lighted streets are always busy. Throngs of coolies carry bundles of dried seaweed or cured fish or rice. Japanese women, wearing bright kimonos with their gay obis (sashes) arranged in precise folds, mince along the thoroughfares. Many of the houses of wood and paper look frail and airy enough for a strong wind to blow them away. They are sturdier, however, than they appear, although they were no more than tinder in the recent fierce blaze that swept the city.

Modern buildings of stone and concrete have been rising in Hakodate in recent years to replace some of the flimsy structures, and modern conveniences, such as electric lights and power, bus lines and trolleys, and water supply and sewage, have been installed.

The city is connected by railway with other cities on the island of Hokkaido, and this line also brings in lumber for export from the natural forests and forest nurseries of the interior (see illustration, next page).

The pride of Hakodate is its large public park which commands a sweeping view of the city and the sparkling harbor. Within its shaded groves are a number of civic buildings, among them a library and a museum of marine products.

An Original Treaty Port

Great Britain, the United States, and Soviet Russia have consulates in the city, which for many years has been the chief commercial center of the island. Sapporo, a smaller city, is now the official capital of Hokkaido.

Trade between Hakodate and the United States has been carried on since 1854. It was one of the original Japanese treaty ports, and exports coal, gold, sulphur, silver, copper and platinum as well as rice, fruit and lumber.

Hakodate experienced thrilling times during the Japanese Civil War of 1868. Here was waged a fierce battle between the Imperial forces and the rebels. The

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in gold whose name, like that of Hadhramaut itself, is known to us from the Old Testament. "Hazarmaveth" the tenth chapter of Genesis calls the latter.

Old Testament Mentions Saba (Sheba)

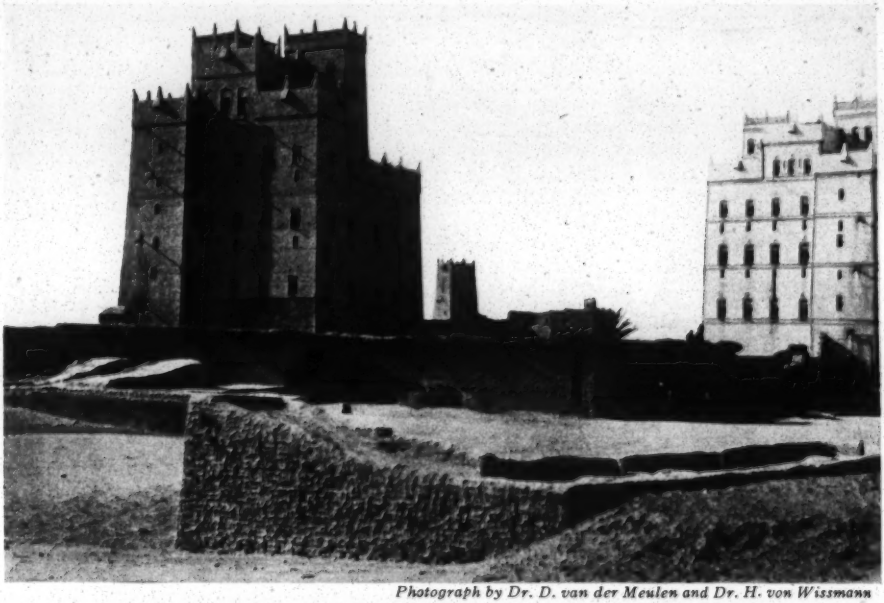
The Old Testament also mentions another Arabian land of mystery, Saba (Sheba), whose "Queen of the South" traveled to Jerusalem on hearing of the wisdom and wealth of King Solomon. The land of Sheba is generally placed by modern authorities in the vague border land between the present-day states of Hadhramaut and Yemen, somewhat south and west of the region explored by the French flyers.

The Romans knew all of these prosperous provinces, naming them *Arabia Felix,* Happy Arabia, in contrast to the rest of the peninsula, which they called *Arabia Deserta* and *Arabia Petrea,* the Desert and Realm of Stone.

Note: Students and teachers interested in Arabia and its historic past should also consult: "Into Burning Hadhramaut," *National Geographic Magazine,* October, 1932; "A Visit to Three Arab Kingdoms," May, 1923; "The Rise of the New Arab Nation," November, 1919; "The Flower of Paradise" and "Mecca the Mystic," August, 1917; and "Where Adam and Eve Lived," December, 1914.

For supplementary reading about nearby regions see: "Changing Palestine," *National Geographic Magazine,* April, 1934; "Citroën Trans-Asiatic Expedition Reaches Kashmir," October, 1931; "East of Suez to the Mount of the Decalogue," December, 1927; and "The Rock City of Petra," May, 1907.

Bulletin No. 2, April 16, 1934.



Photograph by Dr. D. van der Meulen and Dr. H. von Wissmann

AT FIRST GLANCE THIS MAY APPEAR TO BE A NEW YORK SUBURB, BUT IT IS REALLY ARABIA!

"Set-back skyscrapers" and penthouses are not new. Dijar al Buqrie, a desert stronghold at the western end of Hadhramaut Valley, and other cities in this region have built their outlying fortresses in this manner for over 100 years. Made of sun-dried bricks, some Hadhramaut palaces rise to ten and eleven stories above the ground. In hot weather people sleep on the flat roofs or in the penthouses.

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New Exploration of Alaska Peninsula and Aleutian Islands

ODDLY enough, one of the little-known parts of the world is that western "kite-tail" of the North American continent which includes the Alaska Peninsula and the Aleutian Islands—all of it territory under the American flag. The best map of the region is 25 years old, and many large districts have never been surveyed.

But old charts are not to be trusted to-day, because some of the greatest volcanic eruptions of historic times have occurred in the area during the past quarter of a century. These disturbances have greatly altered the relief, drainage, and, in some cases, the actual coastline of the region.

In order that our knowledge of the volcano-torn Alaska Peninsula and of some of the nearby Aleutian Islands may be brought up to date, the National Geographic Society will coöperate with Father Bernard R. Hubbard, S.J., "the Glacier Priest," in an extensive exploring and mapping expedition this summer, according to an announcement made by Dr. Gilbert Grosvenor, President of The Society.

Airplane, Pack-Dogs and Canoes To Be Used

The expedition under Father Hubbard will use an airplane for a general observation of the territory and the making of aërial photographs, and will follow up with detailed work on the ground using trained pack-dogs and modern instruments.

Canoes will be taken down into the craters of Katmai and Aniakchak volcanoes so that soundings and water temperature studies may be made of the lakes that lie in bottoms of the huge pits. Vents in the floors and walls of these and other craters will be observed for the collection of data that may throw more light on the cycles of activity in this important volcanic region. This information may permit the forecasting of eruptions.

The expedition's plane will fly over and photograph the famous Valley of Ten Thousand Smokes, made known to the world by an expedition which the National Geographic Society sent out in 1916 to study the effects of the terrific explosion of Mount Katmai in 1912. This Valley is now preserved as a National Monument.

Movies To Be Made

The expedition will use about 50,000 feet of standard motion picture film and will make some 4,000 still photographs. A portable army wireless set will be taken along and weekly news reports will be sent out. The party will leave for Alaska in May and will return to the United States in September.

The Alaskan expedition is the fourth in which the National Geographic Society is coöperating this year. Announcement has been made of a stratosphere flight in coöperation with the U. S. Army Air Corps (See GEOGRAPHIC NEWS BULLETINS, Week of February 5, 1934); and deep-sea studies through a grant of funds to Dr. William Beebe (See GEOGRAPHIC NEWS BULLETINS, Week of April 9, 1934). The Society is also coöperating in the Second Byrd Antarctic Expedition (See GEOGRAPHIC NEWS BULLETINS, Week of October 30, 1933, December 18, 1933, and January 22, 1934).

Note: Little-known sections of Alaska, our largest possession, are revealed in the following illustrated articles: "'Nakwasina' Goes North," *National Geographic Magazine*, July, 1933; "A World Inside a Mountain," September, 1931; "Mapping the Home of the Great Brown Bear," January, 1929; "A Northern Crusoe's Island," September, 1923; "The First Alaskan Air Expedition," May, 1922; "Our Greatest National Monument," September, 1921; "The Camel of the Frozen Desert (Reindeer)," December, 1919; "The Ten Thousand Smokes Now a National Monument," April, 1919; "The Valley of Ten Thousand Smokes," February, 1918; and "A Game Country Without Rival in America," January, 1917.

Bulletin No. 4, April 16, 1934.

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rebel forces were defeated and the two leaders offered to commit hara-kiri (suicide by disembowelment) that their followers might be saved. As this was not permitted, they surrendered themselves and thus obtained freedom for their troops.

Note: Japan, an Empire constantly in the public eye to-day, is described and illustrated in the following timely articles: "Japan, Child of the World's Old Age" and "Motor Trails in Japan," *National Geographic Magazine*, March, 1933; "Tokyo To-day," February, 1932; "The First Airship Flight Around the World," June, 1930; "Some Impressions of 150,000 Miles of Travel," May, 1930; "Sakurajima, Japan's Greatest Volcanic Eruption," April, 1924; "The Empire of the Risen Sun" and "How the Earth Telegraphed Its Tokyo Quake to Washington," October, 1923; "Some Aspects of Rural Japan," September, 1922; "The Geography of Japan," July, 1921; and "The Making of a Japanese Newspaper," October, 1920.

Back numbers of the *National Geographic Magazine* may be consulted in the bound volumes of your school or public library.

Bulletin No. 3, April 16, 1934.

NOTE TO TEACHERS

Teachers renewing their subscriptions to the GEOGRAPHIC NEWS BULLETINS or new subscribers at this time will receive a full volume (30 issues) of the BULLETINS, including the last four issues of this term, the opening issue next fall, and continuing until a year from the date the subscription was entered. It is often impossible to supply back issues greatly desired for project or unit assignments. A lapse in subscription may be avoided by sending 25 cents (in stamps, coin or money order) for one year's subscription (30 issues) to the School Service Department, National Geographic Society.

Photograph by Joseph H. Ehlers

"HEAVE HO!" (OR ITS JAPANESE EQUIVALENT)

Coolies at Tomakomai, south Hokkaido, piling logs with the aid of heavy ropes and pusher poles. Forests cover more than half the total area of Japan, the islands of Honshu and Hokkaido producing the most lumber. Much valuable building timber is exported through the port of Hakodate.

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Huge Glass Disk Will Become "Star Reporter" of Heavens

THE world of science awaited with bated breath news dispatches from Corning, New York, last month, as some twenty tons of molten blue-white glass were poured into a brick mold in the presence of scores of leading astronomers, technicians and engineers.

When the glass is finally cooled, ground into a titanic disk 200 inches in diameter and 26 inches deep, and coated with an aluminum mirror surface it will be the reflector of the most powerful telescope man has ever known—a veritable "star reporter" of the heavens. From a mountain top in California, some four years hence, scientists will use it to "interview" the depths of space more than 1,000,000,000 light years distant.

All of us have heard of telescopes and many of us have peered at the Moon, Mars, and other heavenly bodies through them. But what is the principle of the high-powered telescope, and how does it work?

Telescope Is a Light Funnel

"We cannot regulate the size of the pupils of our eyes at will, but we can build an artificial pupil that serves the same purpose," writes Dr. William Joseph Showalter, in a communication to the National Geographic Society. "Men call such artificial pupils telescopes.

"Imagine trying to fill a narrow-necked bottle by catching raindrops as they fall. Rain falls all around, but only a few drops go into the bottle. Put a wide-mouthed funnel into the neck of the bottle and see how much more water you can catch. The telescope is merely a light-funnel, wide-mouthed enough to catch many rays of light and to bring them so close together that they can all enter the pupil of the human eye.

"Many of these huge instruments have tubes of greater diameter and length than the dimensions of the most powerful gun ever built. They have grown larger and stronger in a way that is startling. In 1861 the 18-inch Dearborn telescope was the biggest in existence.

"Typical of the big refracting telescopes is the 40-inch equatorial at the Yerkes Observatory in Wisconsin. The chief impression one gets when studying the delicacy of its mechanism is that our knowledge of the infinitely large comes from our mastery of the infinitely small.

"The big lens (which serves the same purpose as the reflecting disk of the new telescope) weighs a thousand pounds and is carried in the upper end of the six-ton, 62-foot tube. To train this big spyglass on a star and keep it there requires that it be mounted on two bearings, one at right angles to the other.

Imagine Earth as a Merry-Go-Round

"To understand the function of these two bearings, imagine yourself on a merry-go-round, looking through a spyglass at a house away off in the distance. In order to keep the house in the field of vision, you would have to move the big end of the glass backward as you traveled forward. The earth is the merry-go-round and the star is the house in the distance.

"So one bearing permits the line of vision in the telescope to move backward as the earth moves forward. Our earthly merry-go-round is rotating at the rate of about 1,040 miles an hour at the Equator, but the sun and the stars are so distant that we seem to pass them very slowly, though their speed as well as their brightness is magnified in the telescope.

"To keep the telescope moving backward as the earth flies forward is at once a very big and extremely delicate task. Imagine swinging a huge instrument 64 feet long and weighing, with its movable parts, 22 tons, through the air with such nicety of poise that the spider thread in the eyepiece, which is 1/6000 of an inch in diameter, is kept constantly cutting in two a star image that is 1/2500 inch in diameter!

"Yet that is what is done at the Yerkes Observatory with the big telescope. In the case of the Mount Wilson 100-inch reflector, the largest in use to-day, the parts to be moved weigh 100 tons. This great telescope in effect brings the moon within 50 miles of the earth. All the instruments are moved by heavy clockwork that carries the big barrel as steadily as the hour-hand of a full-jeweled watch.

"But if we imagine ourselves in the merry-go-round and looking at the house in the distance through a spyglass, we not only have to turn it backward as we move forward in order to keep the house in view, but we cannot see it at all if the glass be pointed too high or too low. However, when we get our spyglass at the proper elevation we do not have to raise or lower it thereafter.

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THIS VAST VOLCANO WAS UNHEARD OF UNTIL 1922!

Within the huge crater of Aniakchak (part of which is shown here) lies a lake, hot mineral and mud springs, grassy meadows, and many different varieties of bird and animal life. From it, too, issues the largest river flowing to the Pacific Ocean from the Alaska Peninsula. The peak within the crater is Vent Mountain. Alaska possesses many such little-known geographic features, some of which will be studied for the first time this summer.

"So also with the big telescope. The astronomer has to put it in the nightly path of the star across the sky before he can follow it in its journey. To do this requires a second bearing, or axle.

"The observer consults his star tables to see exactly how far above the Pole the star's path is. He then moves the lever of an electric motor, and the great tube begins to rise until it is trained on that path. A big circle, distinctly marked and numbered, tells the approximate position. For the exact position, it is adjusted with a slow motion, the adjustment being determined by a very fine circle, the marks on which are read through microscopes.

"Slow Motion" Is Used

"The astronomer now consults his star tables again and finds the star's position in its apparent nightly path at that moment. He pulls a switch, and the big instrument sweeps along the star's well-beaten track until its approximate position is reached. The slow motion is brought into play, and the big barrel swings directly on the star, which the clockwork, in turn, causes the telescope to follow as it journeys across the heavens.

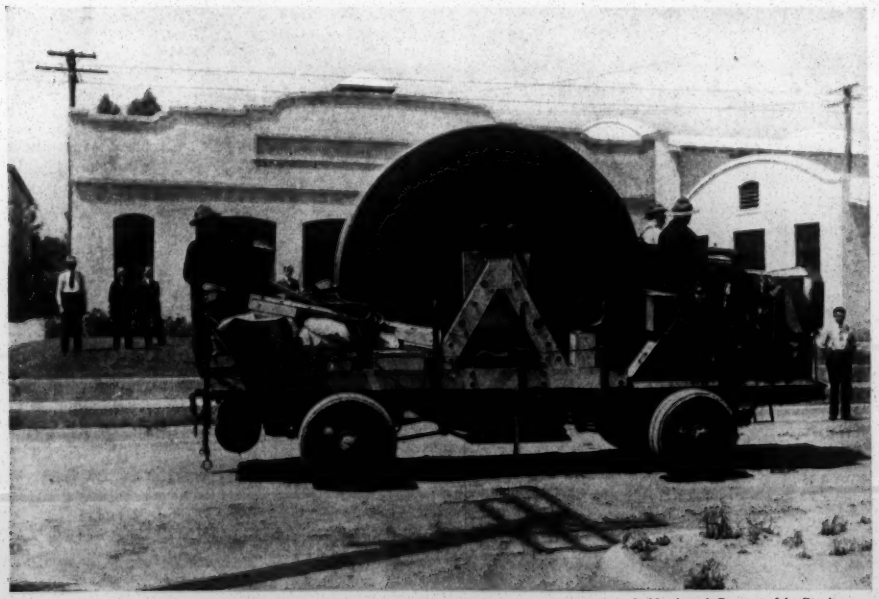
"Suppose that inside your merry-go-round spyglass you should have two spider threads crossing one another at right angles, and that the house you were looking at was a mile away; and then suppose that the glass was so powerful that you could see the head of a nail at that distance; and then further suppose that you kept the intersection of the two spider threads trained on that nail-head. Then you have a fair measure of the delicacy of the adjustments of the Naval Observatory, Yerkes, and Mount Wilson telescopes.

"Formerly the floor of the observatory was stationary, on a level so low that when the instrument was pointed at the zenith a man sitting in an ordinary chair could look into the eyepiece; but when looking at a star nearer the horizon the observer had to climb up a glorified step-ladder twenty or thirty feet high and observe his star from such an unstable perch.

"Now, however, the floors of modern observatories can be raised and lowered like an elevator. The domes are made to revolve, so as to bring the shutter-opening over the object end of the telescope."

Note: Other helpful references to telescopes and astronomy will be found in the following articles: "Observing a Total Eclipse of the Sun" and "Photographing the Eclipse of 1932 from the Air," *National Geographic Magazine*, November, 1932; "Interviewing the Stars," January, 1925; and "Exploring the Glories of the Firmament," August, 1919.

Bulletin No. 5, April 16, 1934.



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HOW THE 100-INCH MIRROR WAS MOVED TO A MOUNTAIN TOP

The motor truck which carried this priceless treasure of the astronomical world from Pasadena, California, up to the summit of Mount Wilson was geared down to four miles an hour, and constantly watched by a special crew of men. Imagine the difficulties in store for those who must transport the new reflector, which is twice as large, some four years hence.